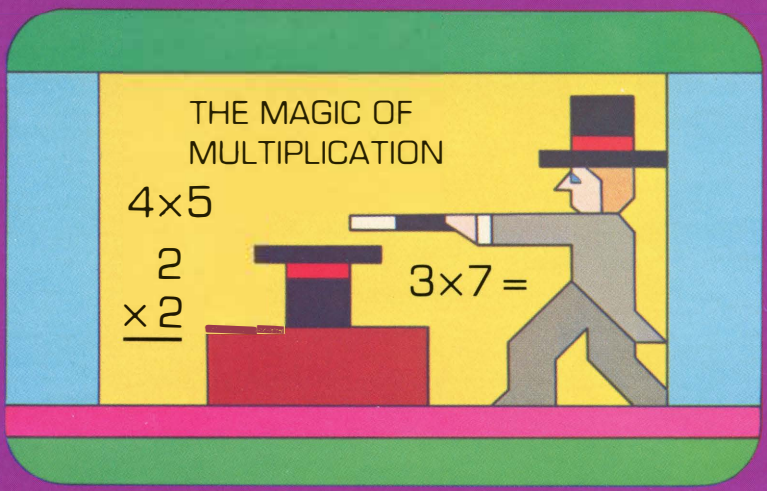
Texas Instruments Home Computer

Multiplication 1

SOLID STATE SOFTWARE™ **COMMAND MODULE**

Makes the learning of basic multiplication facts an exciting experience — almost like magic.



Quick Reference Guide

Note that the key sequences required to access special functions depend on the type of computer console you have. Important keystroke sequences are summarized here for your "quick reference."

TI-99/4	*TI-99/4A*	
PERIOD KEY (.)	**PERIOD KEY (.)**	Gives a brief overview of each activity if pressed when the selection list is diplayed. When the selected activity is reached, release the key. After you view all activities once, the selection list is displayed again.
ENTER	**ENTER**	Eliminates the pauses after the tutorial routine and after each problem drill. Pressing **ENTER** also bypasses the "Do you want one more?" display between the tutorial routine and the drill.
SHIFT R(REDO) **SHIFT Z(BACK)** **SHIFT A(AID)**	**FCTN 8(REDO)** **FCTN 9(BACK)** **FCTN 7(AID)**	Returns to the beginning of the activity in progress.
SPACE BAR	**SPACE BAR**	Stops the program. When it is released, the program continues.
SHIFT C(CLEAR) **SHIFT T(ERASE)** **SHIFT S**	**FCTN 4(CLEAR)** **FCTN 3(ERASE)** **FCTN S**	Moves the cursor one space to the left, erasing the first number of a double-digit answer, if pressed before **ENTER**.
SHIFT Q(QUIT)	**FCTN = (QUIT)**	Returns to the master title screen.

Note: The keys **R**, **Z**, **A**, **C**, **T**, and **S** normally require pressing the **SHIFT** key for the second function. This module, however, does not require **SHIFT** with these keys on either computer. Instead, your child must hold down the key on either computer for several seconds before the appropriate action occurs. Using **SHIFT** with these keys also is accepted on either computer.

TEXAS INSTRUMENTS
HOME COMPUTER

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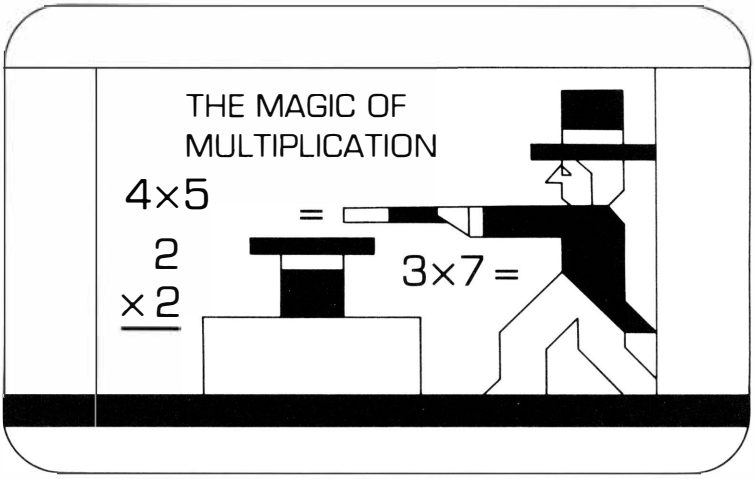

This *Solid State Software*™ Command Module is designed to be used with the Texas Instruments Home Computer. Its preprogrammed solid-state memory expands the power, versatility, and capability of your Home Computer.

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See important warranty information at back of book.

NOTE TO PARENTS

Because children learn mathematics in different ways and at different rates, it is necessary to have resource material constantly available to them. Continuing their policy of providing educational material that is both instructional and entertaining, the staffs of Scott, Foresman and Company and the Texas Instruments Learning Center expand their mathematics series to include the Multiplication 1 *Solid State Software*™ Command Module.

The Multiplication 1 module shows your child the "Magic of Multiplication." It provides a strong foundation not only in the basic facts, but also in later work with larger numbers. Colorful graphics and lively music transform the learning of factors and products into an exciting experience — almost like magic!

The Multiplication 1 module contains eight activities.

- EQUAL GROUPS changes an addition problem into a multiplication problem using the concept of number grouping.
- FACTORS 2 TO 5 explains horizontal multiplication problems for factors 2 through 5.
- FACTORS 0 TO 5 demonstrates multiplication of a factor by 2, 1, and then 0 (zero).
- FACTORS 6 TO 9 increases the multiplication skills to include the factors 6 to 9.
- MULTIPLY ANOTHER WAY presents a smooth transition from the horizontal multiplication problem to the vertical problem.
- HOW MANY IN ALL uses a random number of hats "sprouting" a random number of flowers to demonstrate solving for the product.
- COMPLETE THE BOX provides one factor while your child selects the other and then solves for the missing number (the product of the two factors).
- REVIEW THE FACTS offers 28 multiplication problems with factors 0 (zero) to 9. A stage is set complete with a magician and audience that stands up each time your child correctly answers the displayed problem.

Multiplication 1

The Multiplication 1 module advances your child to more difficult drills according to the number of correct responses given in each activity. The computer automatically advances to the next activity if your child answers 80 percent of the drill problems correctly. If less than 60 percent of the problems are answered correctly, the computer returns to the appropriate activity, providing your child with more practice. This automation helps alleviate anxieties caused by consistently incorrect responses, making the learning of mathematical skills a pleasurable and rewarding experience.

With this module, Texas Instruments continues its tradition of applying innovative *Solid State Speech*™ technology to educational activities. Multiplication 1 is designed to work with or without the Texas Instruments *Solid State Speech*™ Synthesizer (sold separately). However, the Speech Synthesizer must be attached to activate the voice of the computer. The computer's voice then gives directions, reads the equations, and encourages your child to "Try again" when he or she gives an incorrect answer. The addition of speech strengthens the learning process since your child can hear, as well as see, the correct answers.

YOUR CHILD AND THE COMPUTER

The Texas Instruments Home Computer is a rugged, durable device designed for easy use and care. Teach your child to give the computer the same good care and respect he or she would give a television set, record player, radio, or any other piece of electronic equipment:

1. Keep snacks and beverages away from the console.
2. Don't hammer on the keyboard or place heavy objects on it.
3. Don't touch the module contacts. These are recessed in the module to help prevent accidental soiling and/or damage.

The letters and numbers on the keyboard are arranged in the same order found on standard typewriter keyboards. If your child is not familiar with a typewriter or has not used your Home Computer before, take a few minutes to acquaint him or her with the keyboard. Point out the row of number keys at the top and the rows of letter keys below. Show your child how to insert the module and select the activities. This brief "tour" of the computer will help reinforce correct procedures and instill confidence as your child enters a new world of computers.

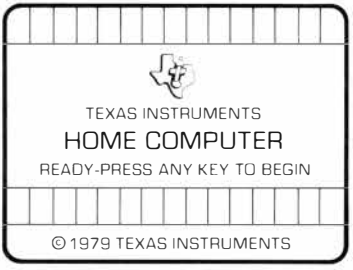
Today, computers are involved in almost every aspect of life. Working with this module can help your child become familiar with computers and their operation. Since computer-aided instruction is more common in the classroom every year, this knowledge can give your child an important advantage.

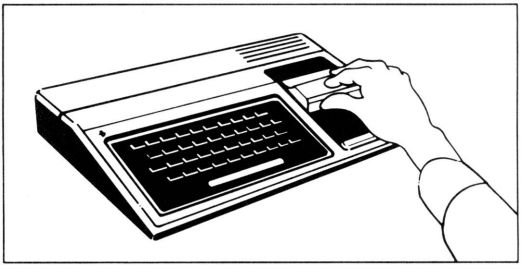
USING THE *SOLID STATE SOFTWARE*™ COMMAND MODULE

To utilize the speech capability of the module, be sure to attach the Texas Instruments Speech Synthesizer to your Home Computer when you use the Multiplication 1 module. (See the Speech Synthesizer owner's manual for complete information on handling, installing, and caring for the speech unit.)

An automatic reset feature is built into the computer. When a module is inserted into the console, the computer returns to the master title screen. All data or program material you have entered will be erased.

Note: Be sure the module is free of static electricity before inserting it into the computer (see page 10).



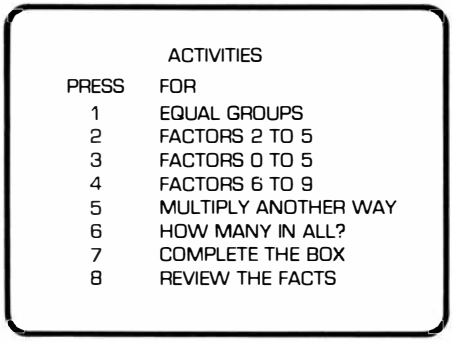


1. Turn the computer ON, and wait for the master title screen to appear. Then slide the module into the slot on the console.
2. Press any key, and the MATHEMATICS COURSEWARE SERIES title screen appears. Next the MULTIPLICATION 1 title sequence begins. To go to the MULTIPLICATION 1 selection list, press the **ENTER** key within two seconds after the title sequence begins, or wait for the title sequence to end and the list appears automatically.

Note: To remove the module, *first* return the computer to the master title screen by pressing **QUIT**. *Then* remove the module from the slot. If you have any problem inserting the module, or if it is accidentally removed from the slot while in use, please see "In Case of Difficulty" on page 11.

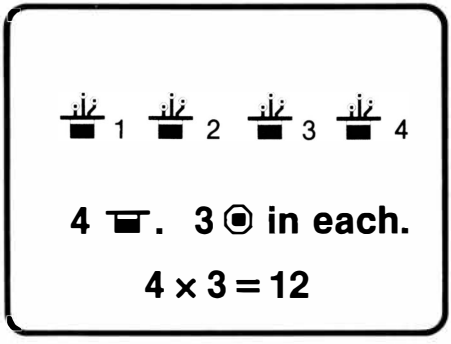
SAMPLE ACTIVITY

After the Multiplication 1 title screen appears, the computer displays a selection list of the eight activities included in the module.



Your child presses the number corresponding to the activity he or she wants to play. For this sample activity, press **6** for *How Many in All*? (We'll assume that the Speech Synthesizer is attached for this example.)

Next, the tutorial routine begins. The display shows a random number of magician's hats "sprouting" a random number of flowers. The computer counts the hats, and that number moves to an empty hat at the bottom of the display. The computer counts the number of flowers in each hat, displays that number, and then prints the multiplication sentence.



The number sentence now erases, and the computer says and displays the total number of flowers. The next display asks your child if he or she would like to see another example. If your child wants another example, press **1** for "Yes." If he or she is ready to go on to the drill, press **2** for "No." Then press **BEGIN** to leave the drill and return to the activity selection list.

SPECIAL FEATURES

"Cursor"

The "cursor" is displayed as a white box with a flashing red border. It prompts your child to respond. When the cursor is flashing, you may answer a problem or change displays.

Rewards

Each time your child gives a correct answer on the first or second try, the computer responds with a visual reward, accompanied by a short melody. These rewards reinforce correct answers and help motivate your child to continue.

Error Signals

Special care has been taken to make the response to incorrect answers low-key and unintimidating. If your child presses an incorrect answer, a red "X" appears over the response, and an "uh-oh" sound tells your child that he or she has selected an incorrect response. Then, the incorrect response and the "X" are erased. Next, the computer tells your child to "Try again," and the cursor flashes again on the display. If the second response is correct, your child gets the visual and musical reward for that activity. If the second response is incorrect, a red "X" appears over the response, and the computer supplies the correct answer.

Remediation

If two consecutive incorrect answers are made, the module assists your child with a visual example of the problem.

Time-Out

The computer says and displays "Your turn" at the beginning of each drill activity. If no response is given in ten seconds, the computer gives a short beep and says, "Your turn." After five more seconds, the computer beeps again and says "What is the number?" If there still is no response, the computer automatically provides more tutorial review or the answer to the problem. If the Speech Synthesizer is not attached, the computer gives a short beep and displays either "Your turn" or "What is the number?"

MULTIPLICATION 1 ACTIVITIES

The eight activities in the Multiplication 1 module are designed to strengthen your child's multiplication skills. Activities 1 through 7 begin with a tutorial routine and are followed by a drill. Each tutorial example gives your child the option of viewing more or progressing to the drill. We suggest that you read through this section completely so that you can help your child select the appropriate starting activity.

Activity 1: Equal Groups

The first activity changes an addition problem into a multiplication problem using the concept of number grouping. The display shows a random number of vertical sets, each containing an equal number of objects. As each set appears, the objects are counted and the sum is printed. A multiplication word sentence is then formed below the addition sentence. Next, the symbols "×" and "=" replace the words "groups of" and "equals," forming a multiplication number sentence. The product then appears, completing the sentence. Next, the process repeats, using horizontal sets. To reinforce the number grouping concept, the drill asks your child to give three responses: the number of objects in each group, the number of groups, and the product of the equation.

Activity 2: Factors 2 to 5

This activity introduces the commutative property of multiplication: $5 \times 1 = 1 \times 5$. The tutorial routine counts a vertical set and displays the appropriate word and number sentences. Then, using the same factors, the routine counts the set horizontally. In the drill, random sets of objects reinforce the ordering concept. With visual assistance, the drill asks your child to complete the multiplication problem.

Activity 3: Factors 0 to 5

Activity 3 demonstrates the commutative property of multiplication for factors 0 (zero), 1, and 2. Groups of objects and corresponding multiplication problems appear on the display. One factor remains the same while the computer works through the problem using the factors 2, 1, and then 0 (zero). Again, sets of objects appear on the display to help your child solve the multiplication problem.

Activity 4: Factors 6 to 9

This activity displays an array of objects ranging from 0 (zero) through 9. The color of each row flashes as the corresponding number briefly appears at the end of that row. As the last row is counted, the total moves to form the first factor of the multiplication sentence. The symbol "×" is added to the sentence. Next, the columns flash and count in the

same manner, with the final number moving to become the second factor in the equation. The symbol "=" then appears. As each row flashes again, the count accumulates and forms the product. This number moves into the product position. The tutorial routine repeats, this time counting the columns and then the rows. The drill displays an array to help your child answer the multiplication sentence.

Activity 5: Multiply Another Way

Multiply Another Way shows how the horizontal multiplication sentence is rewritten in the vertical format. The factors appear so that one is above the other, and the symbols "×" and "=" (changing to "_____") are positioned for the vertical format. The problems in the drill appear vertically. If two incorrect responses are given, a corresponding array is displayed. A cumulative count is made of the objects in each row, with the final number moving into the product position.

Activity 6: How Many in All

Activity 6 counts a random number of hats, each containing the same random number of flowers. These two counts represent the two factors in the multiplication sentence that forms at the bottom of the display. The drill counts the hats and shows the number of flowers in each one. Your child is asked to answer the question, "How many flowers in all?"

Activity 7: Complete the Box

This activity presents a multiplication box with one factor appearing in the middle and the factors 0 (zero) through 9 appearing around the box. The computer completes the box by answering the multiplication problems. In the drill, your child selects a factor (2 through 9), while the computer provides the other factor for each problem. Your child is then asked to complete the box by solving the problems. If an incorrect response is given, the multiplication sentence appears at the top of the display. After two incorrect responses, the computer supplies the answer.

Activity 8: Review the Facts

The review sets the stage, complete with an audience. A total of 28 problems, in random horizontal and vertical formats with factors ranging from 0 (zero) to 9, appear one at a time on the stage. A figure in the audience stands up with each correct response. There is only one try per problem. If your child gets a perfect score, the hat and table appear on the display. The magician walks out, and "Perfect Score!" pops out of the hat. If any problems are answered incorrectly, the computer displays the problems and encourages your child to "study these for next time." Pressing any key at the end of this activity ends the program.

CARING FOR THE MODULE

These modules are durable devices, but they should be handled with the same care you would give any other piece of electronic equipment. Keep the module clean and dry, and do not touch the recessed contacts.

CAUTION:
The contents of a Command Module can be damaged by static electricity discharges.

Static electricity build-ups are more likely to occur when the natural humidity of the air is low (during winter or in areas with dry climates). To avoid damaging the module, just touch any metal object (a doorknob, a desklamp, etc.) before handling the module.

If static electricity is a problem where you live, you may want to buy a special carpet treatment that reduces static build-up. These commercial preparations are usually available from local hardware and office supply stores.

IN CASE OF DIFFICULTY

If the module activities do not appear to be operating properly, return to the master title screen by pressing **QUIT**. Withdraw the module, align it with the module opening, and reinsert it carefully. Then press any key to make the module selection list appear. (*Note*: In some instances, it may be necessary to turn the computer off, wait several seconds, and then turn it on again.)

If the module is accidentally removed from the slot while the module contents are being used, the computer may behave erratically. To restore the computer to normal operation, turn the computer console off, and wait a few seconds. Then, reinsert the module, and turn the computer on again.

If you have any difficulty with your computer or the MULTIPLICATION 1 module, please contact the dealer from whom you purchased the unit and/or module for service directions.

Additional information concerning use and service can be found in your *User's Reference Guide*.

THREE-MONTH LIMITED WARRANTY
HOME COMPUTER SOFTWARE MODULE

Texas Instruments Incorporated extends this consumer warranty only to the original consumer purchaser.

WARRANTY COVERAGE

This warranty covers the electronic and case components of the software module. These components include all semiconductor chips and devices, plastics, boards, wiring and all other hardware contained in this module ("the Hardware"). This limited warranty does not extend to the programs contained in the software module and in the accompanying book materials ("the Programs").

The Hardware is warranted against malfunction due to defective materials or construction. **THIS WARRANTY IS VOID IF THE HARDWARE HAS BEEN DAMAGED BY ACCIDENT, UNREASONABLE USE, NEGLECT, IMPROPER SERVICE OR OTHER CAUSES NOT ARISING OUT OF DEFECTS IN MATERIALS OR WORKMANSHIP.**

WARRANTY DURATION

The Hardware is warranted for a period of three months from the date of the original purchase by the consumer.

WARRANTY DISCLAIMERS

ANY IMPLIED WARRANTIES ARISING OUT OF THIS SALE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANT-ABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE ABOVE THREE-MONTH PERIOD. TEXAS INSTRUMENTS SHALL NOT BE LIABLE FOR LOSS OF USE OF THE HARDWARE OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES, OR DAMAGES INCURRED BY THE CONSUMER OR ANY OTHER USER.

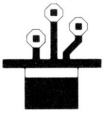
Some states do not allow the exclusion or limitation of implied warranties or consequential damages, so the above limitations or exclusions may not apply to you in those states.

LEGAL REMEDIES

This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

PERFORMANCE BY TI UNDER WARRANTY

During the above three-month warranty period, defective Hardware will be replaced when it is returned postage prepaid to a Texas Instruments Service Facility listed below. The replacement Hardware will be warranted for three months from date of replacement. Other than the postage requirement, no charge will be made for replacement.



TI strongly recommends that you insure the Hardware for value prior to mailing.

TEXAS INSTRUMENTS CONSUMER SERVICE FACILITIES

Texas Instruments Service Facility
P.O. Box 2500
Lubbock, Texas 79408

Geophysical Services Incorporated
41 Shelley Road
Richmond Hill, Ontario, Canada L4C5G4

Consumers in California and Oregon may contact the following Texas Instruments offices for additional assistance or information.

Texas Instruments Consumer Service
831 South Douglas Street
El Segundo, California 90245
(213)973-1803

Texas Instruments Consumer Service
6700 Southwest 105th
Kristin Square, Suite 110
Beaverton, Oregon 97005
(503)643-6758

IMPORTANT NOTICE OF DISCLAIMER REGARDING THE PROGRAMS

The following should be read and understood *before* purchasing and/or using the software module.

TI does not warrant that the Programs will be free from error or will meet the specific requirements of the consumer. The consumer assumes complete responsibility for any decision made or actions taken based on information obtained using the Programs. Any statements made concerning the utility of the Programs are not to be construed as express or implied warranties.

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Some states do not allow the exclusion or limitation of implied warranties or consequential damages, so the above limitations or exclusions may not apply to you in those states.

The Multiplication 1 module provides practice in the fundamentals of multiplication skills. The activities present the basic facts in an interesting and challenging manner. With Multiplication 1, Texas Instruments is continuing its tradition of applying innovation *Solid State Speech*™ technology to educational activities. The optional *Solid State Speech*™ Synthesizer (sold separately) adds the feature of computer speech to the colorful graphics and musical sounds of your computer. Your child can now hear, as well as see, the instructions and problems in the module.

Multiplication 1 module activities include:

- ***Equal Groups*** — Changes an addition problem into a multiplication problem.
- ***Factors 2 to 5, Factors 0 to 5,*** and ***Factors 6 to 9*** — Demonstrate multiplying with the factors 0 through 9.
- ***Multiply Another Way*** — Moves the horizontal multiplication problem into the vertical format.
- ***How Many in All*** and ***Complete the Box*** — Provide practice in solving for the product.
- ***Review the Facts*** — Gives your child drills that reinforce the skills presented in the module.

Adds 18K bytes of active memory with stored program to your TI Home Computer.

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TEXAS INSTRUMENTS
INCORPORATED
DALLAS, TEXAS

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